1-1-1982

Test 1450: Hesston Fiat 1180DT Turbo and 1180 Turbo Diesel 12-Speed

Tractor Museum
University of Nebraska-Lincoln, TractorMuseumArchives@unl.edu

NEBRASKA TRACTOR TEST 1450 — HESSTON 1180DT TURBO FIAT DIESEL ALSO HESSTON 1180 TURBO FIAT DIESEL 12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1038 rpm)								
107.48	2550	6.673	0.433	16.11	188	67	75	28.983
(80.15)		(25.260)	(0.263)	(3.173)	(86.8)	(19.3)	(23.9)	(97.872)
Standard Power Take-off Speed (1000 rpm)—One Hour								
104.22	2458	6.353	0.425	16.40	187	71	76	28.995
(77.72)		(24.049)	(0.259)	(3.232)	(86.1)	(21.5)	(24.3)	(97.912)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
93.65	2613	6.140	0.457	15.25	186	70	75	.....
(69.83)		(23.242)	(0.278)	(3.004)	(85.3)	(21.1)	(23.9)	.....
0.00	2691	2.242	.....	.....	175	70	75	.....
(0.00)		(8.487)	.....	.....	(79.4)	(21.1)	(23.9)	.....
47.66	2660	4.135	0.605	11.53	180	70	74	.....
(35.54)		(15.653)	(0.368)	(2.270)	(82.2)	(20.8)	(23.6)	.....
108.39	2548	6.708	0.431	16.16	189	70	75	.....
(80.83)		(25.393)	(0.263)	(3.183)	(87.2)	(20.8)	(23.9)	.....
23.82	2674	3.145	0.921	7.57	175	70	76	.....
(17.76)		(11.905)	(0.560)	(1.492)	(79.4)	(21.1)	(24.2)	.....
70.64	2633	5.086	0.502	13.89	185	71	76	.....
(52.68)		(19.253)	(0.305)	(2.736)	(85.0)	(21.7)	(24.7)	.....
Av 57.36	**2637**	**4.576**	**0.556**	**12.54**	**182**	**70**	**75**	**29.003**
Av (42.77)		***(17.322)***	***(0.338)***	***(2.469)***	***(83.1)***	***(21.1)***	***(24.1)***	***(97.940)***

DRAWBAR PERFORMANCE (Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (M3) Gear											
92.68	6500	5.35	2550	5.02	6.544	0.492	14.16	189	59	70	28.995
(69.11)	(28.91)	(8.61)			(24.772)	(0.299)	(2.790)	(87.2)	(14.7)	(21.1)	(97.912)
75% of Pull at Maximum Power—Ten Hours 7th (M3) Gear											
73.35	4920	5.59	2626	3.58	5.759	0.547	12.74	186	60	65	28.862
(54.69)	(21.89)	(9.00)			(21.799)	(0.333)	(2.509)	(85.8)	(15.5)	(18.6)	(97.463)
50% of Pull at Maximum Power—Two Hours 7th (M3) Gear											
50.27	3280	5.75	2669	2.43	4.823	0.669	10.42	181	54	57	28.990
(37.49)	(14.59)	(9.25)			(18.257)	(0.407)	(2.053)	(82.5)	(11.9)	(13.6)	(97.895)
50% of Pull at Reduced Engine Speed—Two Hours 9th (H1) Gear											
50.35	3280	5.76	1694	2.39	3.514	0.487	14.33	178	57	62	29.025
(37.55)	(14.59)	(9.26)			(13.302)	(0.296)	(2.823)	(81.1)	(13.6)	(16.4)	(98.013)
MAXIMUM POWER IN SELECTED GEARS											
87.56	12905	2.54	2557	14.54	4th (L4) Gear			187	58	65	29.020
(65.29)	(57.40)	(4.09)						(86.1)	(14.4)	(18.3)	(97.996)
92.66	10302	3.37	2549	8.64	5th (M1) Gear			189	56	66	29.040
(69.10)	(45.83)	(5.43)						(87.2)	(13.3)	(18.9)	(98.064)
93.71	8048	4.37	2550	6.20	6th (M2) Gear			189	55	62	29.060
(69.88)	(35.80)	(7.03)						(86.9)	(12.8)	(16.7)	(98.131)
93.64	6560	5.35	2550	4.98	7th (M3) Gear			188	52	57	29.080
(69.83)	(29.18)	(8.62)						(86.4)	(11.1)	(13.9)	(98.199)
92.98	5344	6.52	2551	3.80	8th (M4) Gear			189	53	59	29.070
(69.34)	(23.77)	(10.50)						(86.9)	(11.7)	(15.0)	(98.165)
91.24	3971	8.62	2550	2.92	9th (H1) Gear			188	54	60	29.070
(68.04)	(17.66)	(13.87)						(86.7)	(12.2)	(15.6)	(98.165)

Department of Agricultural Engineering

Dates of Test: September 14-27, 1982

Manufacturer: FIAT TRATTORI S.p.A. Via Pico della Mirandola 72-41100, Modena, Italy

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.6 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° *(15°/15°)*** 0.8373 **Fuel weight** 6.972 lbs/gal *(0.836 kg/l)* **Oil SAE** 30 **API service classification** SE-SF/CC-CD **To motor** 3.648 gal *(13.807 l)* **Drained from motor** 3.140 gal *(11.886 l)* **Transmission and final drive lubricant** API 303 **Total time engine was operated** 41.5 hours.

ENGINE: Make Fiat Diesel **Type** six cylinder vertical with turbocharger **Serial No.** 8065.24*300-258851* **Crankshaft** lengthwise **Rated rpm** 2550 **Bore and stroke** 4.055″ × 4.33″ *(103 mm × 110 mm)* **Compression ratio** 15.7 to 1 **Displacement** 335 cu in *(5499 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with centrifugal precleaner **Oil filter** two full flow paper cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type front wheel assist with duals **Serial No.** 1280DT/12*760534* **Tread width** rear 64.6″ *(1640 mm)* to 118.5″ *(3010 mm)* front 70.7″ *(1797 mm)* to 88″ *(2235 mm)* **Wheel base** 105.2″ *(2673 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 34.6″ *(880 mm)* Vertical distance above roadway 42.5″ *(1080 mm)* Horizontal distance from center of rear wheel tread 0″ *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph *(km/h)*** first 1.6 *(2.6)* second 2.0 *(3.2)* third 2.4 *(3.9)* fourth 2.9 *(4.7)* fifth 3.7 *(5.9)* sixth 4.6 *(7.4)* seventh 5.6 *(9.0)* eighth 6.7 *(10.8)* ninth 8.8 *(14.2)* tenth 11.1 *(17.9)* eleventh 13.4 *(21.6)* twelfth 16.2 *(26.1)* reverse 3.7 *(6.0)*, 4.7 *(7.6)*, 5.7 *(9.2)*, 6.9 *(11.1)* **Clutch** dry single disc hydraulically actuated and operated by foot pedal **Brakes** multiple wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 202″ *(5.14 m)* left 204″ *(5.18 m)* (on concrete surface without brake) right 241″ *(6.13 m)* left 241″ *(6.13 m)* **Turning space diameter** (on concrete surface with brake applied) right 419″ *(10.66 m)* left 423″ *(10.73 m)* (on concrete surface without brake) right 497″ *(12.63 m)* left 497″ *(12.63 m)* **Power take-off** 540 rpm at 2261 engine rpm and 1000 rpm at 2458 engine rpm.

LUGGING ABILITY IN 7th (M3) GEAR

Crankshaft Speed rpm	2550	2303	2045	1784	1539	1261	1019
Pull—lbs *(kN)*	6560 *(29.18)*	7064 *(31.42)*	7284 *(32.40)*	7322 *(32.57)*	7649 *(34.02)*	8001 *(35.59)*	7487 *(33.30)*
Increase in Pull %	0	8	11	12	17	22	14
Power—Hp *(kW)*	93.64 *(69.83)*	90.57 *(67.54)*	82.85 *(61.78)*	72.64 *(54.17)*	65.24 *(48.65)*	55.72 *(41.55)*	42.30 *(31.54)*
Speed—Mph *(km/h)*	5.35 *(8.62)*	4.81 *(7.74)*	4.27 *(6.86)*	3.72 *(5.99)*	3.20 *(5.15)*	2.61 *(4.20)*	2.12 *(3.41)*
Slip %	4.98	5.44	5.60	5.29	5.90	6.20	5.90

TRACTOR SOUND LEVEL WITH CAB	dB(A)	Front Wheel Drive Disengaged dB(A)
Maximum Available Power—Two Hours	80.0	79.5
75% of Pull at Maximum Power—Ten Hours		79.0
50% of Pull at Maximum Power—Two Hours		79.0
50% of Pull at Reduced Engine Speed—Two Hours		75.5
Bystander in 12th (H4) gear		88.5

DRAWBAR PERFORMANCE
(Front Wheel Drive Engaged)

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr *(l/h)*	lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp. °F *(°C)* Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Available Power—Two Hours 7th (M3) Gear											
93.68 *(69.86)*	6468 *(28.77)*	5.43 *(8.74)*	2549	3.73	6.580 *(24.908)*	0.490 *(0.298)*	14.24 *(2.805)*	189 *(86.9)*	62 *(16.4)*	73 *(22.8)*	28.930 *(97.692)*
MAXIMUM POWER IN SELECTED GEARS											
86.50 *(64.50)*	15317 *(68.13)*	2.12 *(3.41)*	2574	14.93	3rd (L3) Gear			189 *(86.9)*	59 *(15.0)*	66 *(18.9)*	29.020 *(97.996)*
94.87 *(70.75)*	7999 *(35.58)*	4.45 *(7.16)*	2548	4.64	6th (M2) Gear			189 *(86.9)*	55 *(12.8)*	64 *(17.8)*	29.050 *(98.097)*
94.48 *(70.46)*	6521 *(29.00)*	5.43 *(8.74)*	2550	3.85	7th (M3) Gear			189 *(86.9)*	51 *(10.6)*	56 *(13.3)*	29.080 *(98.199)*

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Four 18.4-38; 8; 14 *(95)*	Four 18.4-38; 8; 14 *(95)*
Ballast	—Liquid (each inner)	700 lb *(318 kg)*	None
	—Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 14.9-28; 6; 20 *(140)*	Two 14.9-28; 6; 20 *(140)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	268 lb *(121 kg)*	None
Height of Drawbar		22 in *(560 mm)*	22 in *(560 mm)*
Static Weight with Operator—Rear		11660 lb *(5289 kg)*	10260 lb *(4654 kg)*
Front		5225 lb *(2370 kg)*	4690 lb *(2127 kg)*
Total		16885 lb *(7659 kg)*	14950 lb *(6781 kg)*

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 144°F *(62.2°C)*. Six gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1450.**

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director